OCTOBER 1948
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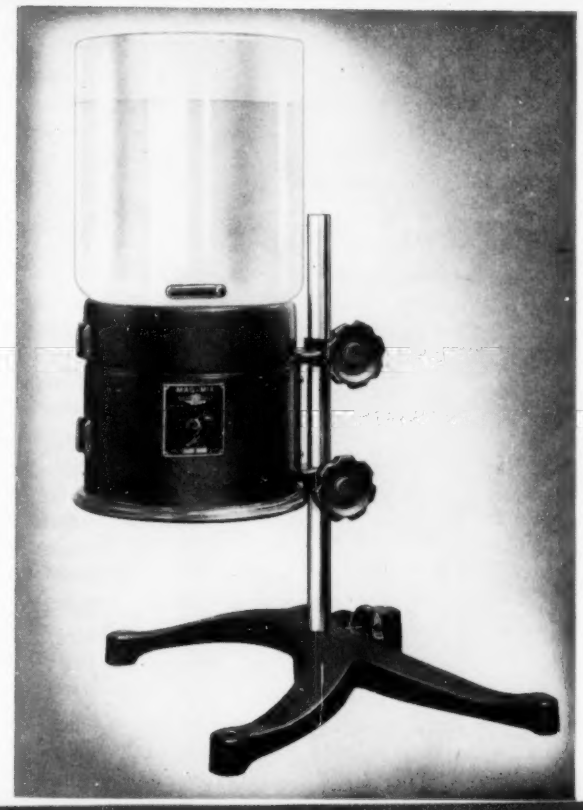
# The INSTITUTE Spokesman



SENIOR
MAG-MIX
STIRRER

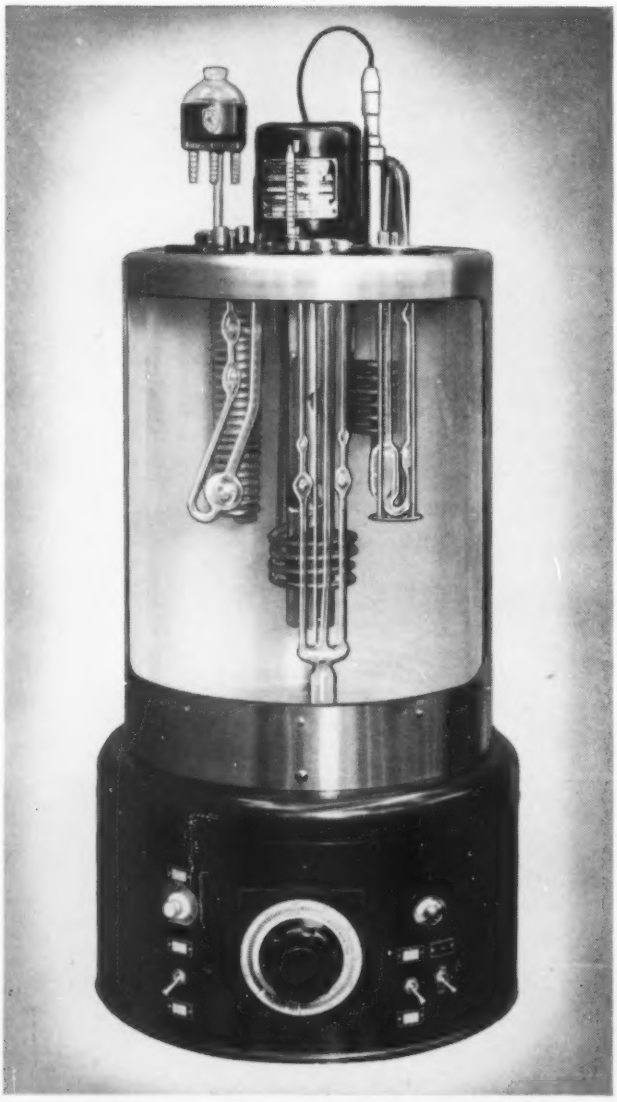
See Article on Page 3

## In this issue...




Official Publication of NATIONAL LUBRICATING GREASE INSTITUTE

# Model S KINEMATIC VISCOSITY BATH



WRITE FOR BROCHURE NO. T-10444R-F

## 6 TUBE CAPACITY
## A.S.T.M. D 445 - - A.A.F. 3608

Designed for Kinematic viscosity determinations with Ostwald, Ubbelhode, and other suspended level viscometers, the "Precision" Model S Kinematic Viscosity Bath incorporates new and novel features that insure accurate operation and trouble-free service.

## *Features*

RANGE. Temperature range below room up to 212° F. The bath is maintained at the temperature of test within ± 0.025° F. or better.

EFFICIENT STIRRING ASSEMBLY. The Octo-Mix Tubular Stirrer, driven by an induction motor, was especially designed to insure uniformity thru-out, without an entrainment or violent agitation. Stirrer insures a complete liquid change every second.

INSULATION. Stainless steel jacket with large Plexi-glass window fits around bath, provides ¾ inch of dead air space between bath and jacket thus insulating bath without impairing visibility.

SAFETY. Plexi-glass window protects operator in the event of jar break.

VISIBILITY. Complete visibility is assured at all times. A circular fluorescent light, placed just below the Pyrex jar is used to illuminate the bath interior. The back side of jacket has a white enamel finish to insure perfect visibility.

COOLING COIL. The cooling coil is of special design, with uniform flow, giving accurate control of temperatures below room.

ACCURATE CONTROL. Highly sensitive, adjustable Micro-Set Regulator gives positive temperature regulation and control. All controls are conveniently grouped and mounted in base.

*Purchase From Your Laboratory Supply Dealer*

# Precision Scientific Company

3737 WEST CORTLAND STREET PRECISION PS SCIENTIFIC CHICAGO 47, ILLINOIS, U. S. A.

★ ★ ★ *Scientific Research and Production Control Equipment* ★ ★ ★

93-48

# ABOUT THE COVER . . .

**NEW MAGNETIC STIRRER BY PRECISION**

The "Precision" Senior Mag-Mix is a new addition to the popular line of "Precision" magnetic stirrers. It is designed to provide laboratories with a dependable, simple to operate stirrer that is powerful in operation and versatile in use.

The Senior Mag-Mix can stir solutions in open vessels, closed systems, under pressure, in a vacuum or in round bottom flasks. Large quantities of liquids such as the 6-7 liters shown on cover can be stirred and liquids having the viscosity of an SAE No. 90 oil at room temperature can be stirred with ease and efficiency. The Senior Mag-Mix incorporates an entirely new stirring design which utilizes an encased permanent Alnico Magnet for a stirrer and a permanent Alnico Magnet mounted on an adjustable speed motor. Alnico magnets are enclosed in either glass or alkali and acid resistant plastic, which will withstand temperatures to 190°F. The Alnico magnets do not come in contact with liquids being stirred.

Speed ranges from gentle slow movement to vigorous agitation. Motor and rheostat with calibrated dial are mounted in fully enclosed aluminum housing. Rheostat has off position allowing operator to cut current completely off.

## Minteer Becomes Secretary of Stewart-Warner

The elevation of James I. Minteer to the post of secretary of Stewart-Warner Corporation has been announced by James S. Knowlson, president and board chairman. Minteer had been assistant secretary and assistant treasurer since 1943, and his appointment filled the vacancy created by the death of A. R. Benson on July 31.

Minteer joined Stewart-Warner in 1942 as fiscal agent of the Green River Ordnance Plant, Amboy, Illinois, government munitions plant operated by Stewart-Warner during the war. Prior to 1942 Minteer maintained his own mortgage, real estate and insurance business in Chicago, following several years of banking work as trust department manager and subsequent bank liquidation duties for the Illinois State Auditor's office.

## Prairie States to Active Member List

Prairie States Oil and Grease Company of Danville, Illinois, a few weeks ago added its name to the N. L. G. I. Active Member list.

The manufacture of grease up to this time has been a sideline with the company, however an expansion program is underway in the firm to give more and more prominence to grease manufacturing.

Mr. Hall Stewart will act as Prairie States' Technical Committee and Coordinating representative to the N. L. G. I. Mr. Stewart is a full partner in charge of all plant operations, which includes the manufacture of grease.

"Grease", as Mr. Stewart was dubbed in college, has always held great interest for him. Receiving his Petroleum Engineering Degree at the Colorado School of Mines, Mr. Stewart during the war was kept in a research laboratory at Emeryville, California, spending a large part of his time on waxes, greases and lubricating oils.

The Prairie States Oil & Grease Company started in business in Danville in 1937. Since that time the business has grown swiftly and steadily into prominence in the industry.

**HALL STEWART of Prairie States**

*The* INSTITUTE SPOKESMAN

*Published monthly by*
THE NATIONAL LUBRICATING GREASE INSTITUTE

HARRY F. BENNETTS *Editor*
4638 Millcreek Parkway
Kansas City 2, Mo.



## Buflovak Equipment Division Of Blaw-Knox Company Opens Texas Office

Buflovak Equipment Division of Blaw-Knox Company, Buffalo, N. Y., manufacturers of Chemical and Food Processing equipment and large Gray Iron Castings, announce the opening of an office at 441 First National Bank Building, Houston, Texas. Mr. Hugh P. Coulter, Sales Engineer with the New York Office for the past 12 years, will be in charge.

# LUBRICATION . . . a tool for Preventive Maintenance

by HOWARD COOPER
Sinclair Refining Co.

IN ALL languages and throughout past ages there can be found a proverb expressing the truth that has come down to our generation as "A stitch in time saves nine", or "An ounce of prevention is worth a pound of cure." In his directness, the engineer tersely translates these sayings to the simple phrase, "Preventive Maintenance." The master mechanic knows that a bolt in time at a weak point may save many bolts and a major repair job later on. Also, it has been proven repeatedly that an inexpensive ounce of lubricant may be worth much more than many pounds of costly replacement parts.

The curse of maintenance is not in the repairs incident to keeping machinery in operating trim, costly though they may be, but in the down time when equipment is laid up for adjustment and repair. Down time means lost production that can never be recovered, and it can be a sizable factor in cost of manufacture. In a more leisurely past little significance was attached to the repairing of machinery; it was accepted that equipment would wear out and break down, and the master mechanic's job was to fix it. Today, however, a foremost responsibility of plant engineers and master mechanics is to prevent machinery from failing. The plant engineer's and master mechanic's value lies not so much in his ingenuity and mechanical skill, as in his ability to prevent the demand for his talent with tools.

Preventive maintenance is not a simple or abstract principle; it is an objective phase of plant operation with many co-ordinated facets each of which is important to the effectiveness of the whole. First, it calls for a searching study into what may happen, and into plans and ways to prevent such happenings. There must be controls over the loading of machinery, and over speeds, also minimizing of shocks and pressures to utilize these properties. Through subsequent years petroleum refiners have made oils and greases of increasingly greater capabilities, and machine designers have availed themselves of these improvements to produce machinery of higher speeds of operation, and greater power and load capacity.

Something slippery may have been all that was required for machines of yesteryears, and the same slippery material satisfied many kinds of equipment. So oils were roughly catalogued into a few simple groups, such as engine oils, circulating oils, heavy journal oils, steam cylinder oils, and a few more. Likewise greases were either axle greases, cup greases or fiber greases.

In their time these classifications were adequate. An engine or machine oil was applied to plain bearings, and was not recovered; viscosity or body suited to the speeds and loads was perhaps the most necessary characteristic of the oil. Then came circulating systems, where the oil was used over and over; a more highly refined oil was necessary to provide other qualities that were important, such as good demulsibility to permit quick separation from moisture. The turbine circulating system was a further refinement; besides good demulsibility, stability against sludging under conditions of elevated temperatures and at high speeds became an added requirement. Rusting manifested itself as a troublesome problem, and refiners were called upon to provide oils with corrosion preventive properties, without sacrificing the other necessary qualities.

Similar development took place for other applications. To meet the more exacting conditions imposed by higher pressures and high superheat temperatures, improved steam cylinder oils were developed. When a hydraulic oil was just a hydraulic fluid subjected to no unusual service demands, simple light bodied oils gave wholly acceptable service, and still do in some installations. But in the hydraulic oil category today there must also be other finely developed oils for the precision mechanisms now incorporated in shop tools and equipment—oils with high

(Continued to page 8)

# OIL PROGRESS DAY

## October 14th

October 14th has been designated by the Oil Industry Information Committee as "Oil Progress Day". It will be a day when individual oil companies throughout the nation will report to their local communities on the progress they have made in meeting the record-shattering demand for petroleum. It will be a great demonstration of the benefits that accrue to the American people from the competition in the oil industry.

The petroleum industry is an outstanding example of growth and progress under the American free competitive system.

***34,000 Competitive Firms***

Founded in 1859, the industry played an important part in the opening and development of the machine age. It made possible America's commanding leadership in industrial production.

From a mere handful of companies in Pennsylvania, the industry has grown to more than 34,000 competitive firms. This growth is still in progress. More than 2,200 new companies have entered the industry as oil producers during the last three years and 1,300 firms have entered the marketing end of the business in the last year.

Today the oil industry provides a good business career and a good living for about two million men and women; its record of employment is outstanding among American industries for stability, welfare and benefit plans, and opportunities for advancement.

Competition is keen among oil companies to meet the public's growing needs. Expansion of facilities to serve the public has been rapid. This expansion has been financed entirely by private capital and earnings which have been re-invested in the business. Since pre-war 1941 the oil industry has increased the volume of its products delivered to consumers at a rate twice the average of all industry.

**Graco Motor Oil Reel**

## Gray Company Manufactures New Oil Dispensing Reels

Overhead and floor-level reels for dispensing bulk motor oil and the new power transmission oils are now being manufactured by Gray Company, Inc., of Minneapolis, Minnesota.

In using these reels, oil is pumped directly from the refinery container to the crankcase. Special features are a twenty foot hose, handfitting control valves and a non-drip nozzle. Reels for motor oils, chassis lube, gear lube, air and water can be combined in one bank.

***It All Started in 1859***

Commercial oil production began with one well in Pennsylvania in 1859. Since then more than 1,200,000 wells have been drilled in 25 states. Aided by steady improvements in drilling techniques, competitive exploration is continuing in new areas and at deeper levels in the never-ending search to produce more oil.

From the original "pot still" which produced kerosene in the early days, the industry has expanded and improved its refining facilities so that today more than 1,200 products are made from crude oil.

From horse-drawn wagons, flat boats, and flat cars, loaded with casks, the industry has developed its own unique transportation system. Today in daily operation is a vast system of modern pipelines, barges, tankers, tankcars and tank trucks.

Early marketing of oil products was handled through country stores and blacksmith shops. With the advent of the automobile the industry developed the service station, the forerunner of a new method of merchandising of consumer products and services. Today service stations are conveniently located in nearly every community. Their number is greater than that of postoffices, drug or grocery stores.

***Demand Unprecedented***

To meet the ever-rising and unprecedented demands for products and services, the industry is engaged in expanding facilities in all operations. This calls for an investment of $4 billions in 1947 and 1948.

More than one hundred million dollars is spent annually by the oil industry in research to develop new techniques, to improve quality, to make maximum use of oil produced, and to provide new uses for oil to meet anticipated public needs. Fifteen thousand workers are employed in research activities alone.

Through keen competition under the American system, and an awareness of the necessity for meeting the needs of the public, the oil industry continues to develop its opportunities to contribute to America's progress and the well-being of its people.

# WANTED

## THE "BAT" GANG

ART DANIEL

RALPH MATTHEWS

RAY TIMBERLAKE

GEORGE MILLER

CARL BOLTE

HAROLD SECHREST

DON McKELVEY

ART EVANS

JIM CONSIDINE

WILSON SIMMONS

**These men are well known as Lubrication and Sales Engineers**

**HIDE OUT:** They are seldom seen together. They prefer to operate individually and are often seen in the company of wide-awake wholesalers and jobbers.

**LAST SEEN:** These men were last seen in Kansas City, Mo. They may be in your office today . . . watch for them.

**CAUTION:** All of these men are armed with sales ammunition and proof that the products of the Battenfeld Grease and Oil Corporation are outstanding.

**IDENTIFYING CHARACTERISTICS:** Each of these men has a friendly manner. All possess unusual knowledge of wholesale and jobbing problems. They talk confidently and intelligently about the thousands of different formulae and Bat's field proven products which have been sold to millions of satisfied customers. Each man will show how Battenfeld Lubricating Greases and Waterproofing Materials increase jobber sales when packaged under the jobber's private brand or company name.

This gang is dangerous when approached on service. They'll let nothing stand in their way in providing "personalized" attention.

# REWARD

**Phone, Wire, or Mail your orders to the Battenfeld Grease & Oil Corporation! Offices in Kansas City, Mo.--Minneapolis, Minn.--North Tonawanda, N. Y. You will be rewarded with superior products and efficient service.**

# CCA Joins Institute As Active Member

## Consumers Cooperative Association Largest of Its Kind, Started With $3,000 Capital

The Consumers Cooperative Association of Kansas City, Missouri, recently joined the N. L. G. I. as an active member. Mr. R. P. Lee of this company, will act as both Technical Committee and Coordinating Representative to the Institute.

***From a Small Beginning***

Six local cooperative associations in Missouri, Kansas and Colorado decided in 1929 to pool their orders for petroleum products and other farm supplies. With $3,000 capital they launched the CCA to serve as central purchasing agent for the group.

Business began in a building about the size of a two-car garage in North Kansas City, Missouri. In addition to purchasing supplies for its members, CCA began to do organizational work among other cooperatives. At the end of the first year there were 22 member associations. They had done a business volume of $309,890.70.

The new wholesale compounded lubricating oil, manufactured grease and established a paint factory. Constantly increasing in size, CCA moved many times and outgrew many quarters.

***Growth Is Rapid***

In the meantime, the organization had built and placed in operation at Phillipsburg, Kansas, the first petroleum refinery and the first crude-oil gathering pipe line, (70 miles long) ever owned by a cooperative in the United States. It went into production January 1, 1940, using 3,500 barrels of crude oil daily, and that same fall CCA became the first co-op ever to drill an oil well. About a year later, in order to provide additional refined fuels for its growing membership, CCA purchased a 1,500-barrel refinery then in operation at Scottsbluff, Nebr. In July, 1943, CCA joined hands with four other regional cooperatives to buy the largest refinery now owned by cooperatives, the 17,500-barrel-a-day plant at McPherson, Kansas, and its 229-mile pipe line to Council Bluffs, Iowa.

Still more refining capacity was a "must". On January 1, 1944, CCA purchased the 13,500-barrel refinery at Coffeyville, Kansas, which has in connection with it a lubricating oil refinery that produced more than 20,000,000 gallons of motor oil in 1945-46. This development caused another jump in size and again more office space became imperative. In November, 1944, the headquarters office staff was moved from North Kansas City to Tenth and Oak streets in Kansas City, Missouri.

CCA also deals in lumber, food canning, poultry and livestock feed, liquefied petroleum gas and petroleum jellies. It has a legal department, an education division, an auditing service, and a twice-a-month newspaper of large circulation.

## Lubrication for Preventive Maintenance

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oxidation stability, rust prevention and non foaming properties particularly fitted to the combination of operating demands.

Also now that ball and roller bearings have taken a prominent place in machine construction, specialized greases are needed. Simple cup or fiber greases, made with calcium and soda soaps respectively, and generally using very light lubricating oil as the petroleum portion, may not permit long life of either bearing or lubricant. Ball and roller bearings often are packed with grease with expectation of months and even years of service before repacking. Highly refined mineral lubricating oil of suitable viscosity, stable against oxidation supplants the non-viscous oil of the common cup greases; combinations of soaps and techniques of manufacture were developed to provide greases with staying qualities under the service conditions imposed.

Developments in metallurgy have imposed still other demands on lubricants. Some alloys used for bearing metals are sensitive to corrosion from acidic materials resulting from oxidation; some metals act as catalysts to accelerate oxidation, which results in the formation of varnish and gum. Alloys have been developed with ability to carry high unit pressure loads and this has required the oil refiner to provide lubricants with extreme pressure characteristics so that full advantage may be taken of the load carrying capacity of the bearing metal or gear tooth. With respect to gears, the simple theoretical rolling contact of spur gears has given way to combinations of rolling and sliding friction in helical and hypoid gears; the adhesive viscous lubricant familiar for use on larger exposed gears is inapplicable in enclosed cases housing high speed hypoid gears, and new complex lubricants had to be developed.

In this way lubricants have progressed keeping pace with machine

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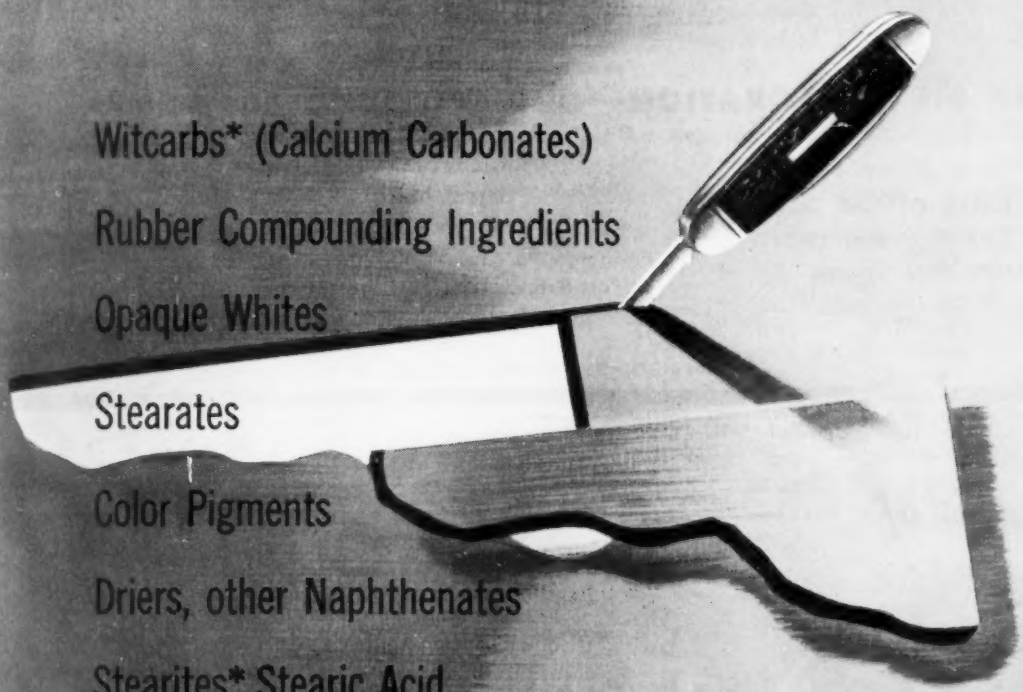
# WITCO Products for the Chemical Industries



Witcarbs* (Calcium Carbonates)

Rubber Compounding Ingredients

Opaque Whites

Stearates

Color Pigments

Driers, other Naphthenates

Stearites,* Stearic Acid

Asphaltic Mastics

Carbon Blacks

## A NEW WITCO STEARATE FOR GREASES

Witco Aluminum Stearate 22-C has been developed particularly to increase yield. Greases prepared with this material are characterized by exceptionally high melting point and worked stability. Write for specifications and samples.

**WITCO CHEMICAL COMPANY**

MANUFACTURERS AND EXPORTERS

295 MADISON AVENUE • NEW YORK 17, N. Y.

LOS ANGELES • BOSTON • CHICAGO • DETROIT • CLEVELAND
SAN FRANCISCO • AKRON • LONDON AND MANCHESTER, ENGLAND

*Trademark

# Emery Welcomed by Institute

## CINCINNATI CHEMICAL MANUFACTURER SWELLS ASSOCIATE MEMBER LIST

The N. L. G. I. recently welcomed as a new associate member Emery Industries, Inc., a chemical manufacturer of Cincinnati.

Robert F. Brown will act as Company representative and Robert A. Behrmann will be Emery's representative on N. L. G. I.'s Technical Committee. Mr. Brown is Chemical Sales Manager of the sales department which handles all Emery Fatty

**R. A. Behrmann**
**Technical Committee Representative**

Acids and Twitchell products. The Sales Service branch of the same department is Mr. Behrmann's headquarters.

### Will Announce Three New Products

Emery is about to announce the commercial availability of three new products. The first of these, a Stearic Acid with an extremely low iodine value is ready now. Production of the other two has begun and the public announcement will be made shortly. The latter two are a very pure Oleic Acid available commercially containing in excess of 90% of the $C_{18}$. Mono-ethlylenic Fatty Acid, and a dimerized Fatty Acid which is a $C_{36}$. Diabasic Acid.

### From Realty to Lard Oil

Thomas Emery came to Cincinnati about 1838 and established an office there under the title of the Immigrant. His first activities were confined to Realty transactions but his "Land Office" changed its complexion quite early because Cincinnati was an important meat packing center. It is assumed that he dealt in lard oil at first, because it was the principal source of illumination provided by oil lamps.

The actual company was founded in 1840 and its principal business was the manufacture of tallow candles. In looking for ways to improve the crude product of that day, the Stearic Acid Candle was an early improvement, the exact date of which is not a matter of record.

### Becomes Emery Candle Company

Seeking better transportation facilities, the plant was moved in 1849 to the edge of the Ohio River. However, because of recurring floods and with the development of rail transportation, the plant was moved in 1887 to its present location in the soap and tallow district located in St. Bernard, a suburb of Cincinnati. Shortly thereafter it was incorporated as the Emery Candle Company. Its products no longer confined to "household" items included an undistilled Red Oil, Stearic Acid and Glycerine.

### Develop Famous Fat Splitting Process

Dr. Ernst Twitchell began his forty years with Emery in 1885. His early research resulted in the development of the world famous Twitchell process for splitting fats. Out of that development came a branch of the Company devoted to the manufacture and use of Petroleum Sulphonates. By 1920 the complete line of Fatty Acids had been augmented by a group of blended oils and emulsifying bases. Some of these were prepared specifically for soapers to be used in their fats splitting department. Others found a wide acceptance in the Textile Industry where they were used primarily for the lubrication of textile yarns both natural and synthetic. One of the best known of these products was the old Twitchell Oil 3X which was developed to increase the speed of wetting back of Sanforized Fabrics.

A third group of Twitchell compounds is best exemplified by the several Twitchell Bases developed to solubilize mineral oils. The Bases for Cutting and Grinding Oils are the most important examples of this class of products.

### Have Introduced Many New Products

Research devoted to developing a broader special line of solid and liquid Fatty Acids for the manufacture of lubricating greases and soluble fatty-base oils has produced not only a broader selection of the products but has led also to the manufacture of a group of Plasticizers for Vinyl Resins, and special Fatty Acids for surface coatings, adhesives, and many other uses.

Another product, Sanitone, introduced some sixteen years ago, has been highly important to the dry-cleaning process. It now enjoys complete distribution in the United States and numbers among its users, large cleaning establishments in several foreign countries including the whole of Canada.

While making these advance-

**R. F. Brown**
**Company Representative**

ments in processing methods illustrated by the development of solvent separation of Fatty Acids by the Emersol Process, the adoption of

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# Presidents Column

by J. R. CORBETT, President N.L.G.I.

## *Looking Forward*

Viewing the end of my year as President of the N. L. G. I., the title of this column could logically be "Looking Backward". Looking over the plans and accomplishments of the past year, I can see nothing but a sound foundation for even greater attainments. With the rest of you I find myself looking only to the future.

If I were to designate a basis for present Institute success and future attainments, I would not have far to look. During the past year the sinews of our increasing strength have been apparent to the most casual observer. They can be easily described as: an active Board of Directors, alert Committees and a cooperative National Office.

I cannot praise the 1948 Board of Directors too highly. Their interest and loyalty to the Institute has been completely evidenced by excellent attendance at their meetings. As a group they have worked in complete harmony for the single purpose of creating an industry that will be of greater service to its members and the public it serves. It has been their constant aim to complete 1948 plans for a greater 1949, and an even greater 1950. Their unselfish devotion to our industry is now rewarding us; greater rewards are still in store by continuing the substantial structure they created in 1948.

The 1948 Committees have turned in an outstanding job. Our Technical Committee under the capable leadership of Chairman T. G. Roehner has undertaken a project that should result in tremendous value to this industry. Attempting to cover its magnitude here would only be repeating the message he has consistently carried in the "Technical Committee Column" each month in the "Spokesman".

Operating in a completely diverse field, Howard Cooper has led his Membership Committee so successfully, that 22 new members have joined with us this year. This total is two more new members than the record breaking new membership year of 1947.

The message of our industry has always been carried to the members through the medium of our official publication, "The Institute Spokesman". The year has witnessed its growth to a 32 page publication with a circulation reaching almost all the nations of this world. Well endowed with excellent advertising, it is now in an enviable position to expand

(Continued to page 20)

Only a plant so modern . . .

Only control so exact . . .

# can produce Quality-Controlled AERO* BRAND Stearates


AERO BRAND Stearates are contributing materially to more efficient grease-making, better lube performance. American Cyanamid's new plant at Woodbridge, New Jersey, is the answer.

For here are the most modern manufacturing facilities of their kind . . . new methods under meticulous control for the production of metallic soaps of unprecedented purity and uniformity.

Always specify the quality-controlled stearates that come to you in the sealed, multi-wall bags—marked A CYANAMID Product.

*Trademark

SALES OFFICES: Boston, Mass.; Philadelphia, Pa.; Pittsburgh, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; Detroit, Mich.; Kalamazoo, Mich.; St. Louis, Mo.; Los Angeles, Calif.; San Francisco, Calif.; Seattle, Wash. In Canada: Dillons Chemical Co. Ltd., Montreal and Toronto.

American
Cyanamid Company

Industrial Chemicals Division

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

# A DAY WITH The INSTITUTE Spokesman

*A Picture Story Of "The Spokesman". . . . . From the first glimmer of an idea . . . . to this completed issue on your desk.*

Curiosity somehow or other must be satisfied. Recently there has been more than ordinary curiosity about the official publication of the National Lubricating Grease Institute, "The Institute Spokesman". Probably whetted by its paramount position as the only publication devoted entirely to the lubricating grease industry; plus continued expansion in size, advertising and circulation, the inevitable result of just plain curiosity of "how come" and "who does it" has occured.

Recently the folks working on the "Spokesman" had an unusual opportunity one day to work on both the September and October issues at the same time. It suddenly dawned on us that this might be the opportunity of a lifetime to pull back the curtain and display the entire process from opening the mail containing an article to hauling the completed "Spokesman" out the door for mailing.

## PICTURES TELL THE STORY

We could have written a story about the publishing of these two issues—pictures seemed to be the answer. Not only would they tell the story, but they would also dramatize the part each person and machine plays in the action every month.

But pictures have one drawback. Although machines are never conscious of being photographed, people are—and invariably assume a posed appearance that kills any life there could be in their actions. The only answer was to call a photographer immediately, snap the entire proceedings and hope to high heaven the results would give you a true version of exactly what went on that day.

The results answer for themselves on the following pages. None of the pictures were posed beyond that of snapping each picture when the subject apeared least conscious of the camera. The only exception was the office secretary, Mrs. Laura Siefkas, whose photogenic countenance never completely forgot that there was a camera in the room. Others proceeded in shirt sleeves, littered desks, and an irritable consciousness of the broiling humidity that simmered at an even 92 degrees outside and indoors.

## WHO PLANS IT— WHO PRINTS IT

Although the pictures indicate only five persons actually planning

(Continued to page 17)

**Office secretary, Mrs. Laura Siefkas, opens envelope containing technical article for publication.**

**Whisks into office of Editor, Harry F. Bennetts, with the announcement that it has arrived.**

## "THE INSTITUTE SPOKESMAN". . . From Manuscript to Your Desk

Calls in Associate Editor, Joan Schindling, tells her article has arrived for October publication, asks her if it can be published prior to the Annual Meeting. Office secretary stands by for instructions.

Printer's representative, Arthur Smith, arrives for consultation and tells them that the September issue will be delivered for mailing that day. He then glances over new copy for October publication just brought in by Mrs. Siefkas who seems to be thoroughly enjoying entire proceedings.

To Miss Schindling's office to make final October publication plans. Smith shows galley proofs completed so far.

Bennetts leans over to look at a headline, tells them to take part of it out. "Top of your page is crowded", he explains.

Miss Schindling starts to paste up galleys just received from Smith. When completed, dummy will be sample of magazine that will be printed.


Printer was right. September issue did arrive that day, was packaged ready for mailing, then put in these mail sacks ready for delivery to post office.

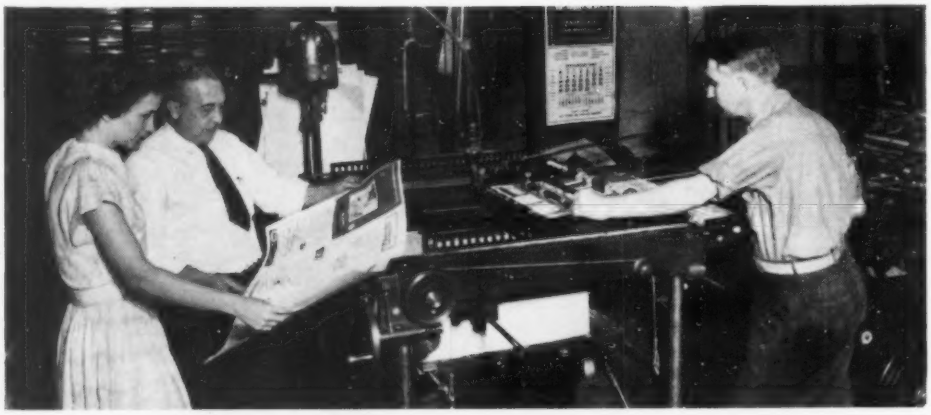
(Continued to page 16)

Out the door of the office goes the "Spokesman" for delivery to post office.

# PRINTING "THE SPOKESMAN". . . Candid Shots of Some Printing Operations

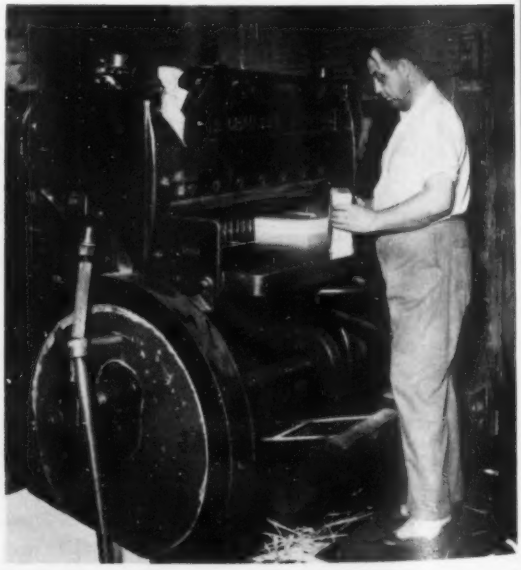
Original typewritten copy furnished by a "Spokesman" contributor goes to this linotype machine where it is set in type. Machine sets about 25 column inches of type an hour. Large headline type is set by hand.

Makeup. These two men are composing linotype and hand-set type into complete pages, and then into multi-page forms ready for the press.



Smith has called Miss Schindling to plant where they both hurriedly inspect outside 16 page form as it comes off high speed press capable of 3,000 impressions an hour. "Spokesman" cover can be seen in upper right hand corner of sheet.

After printing, the various sections are gathered together at this automatic binding machine where they are stitched.



All together now, the completed "Spokesman" is put into this cutter where its three open sides are trimmed, final operation in printing process.

## Day With
## he Spokesman"

(Continued from page 14)

"Spokesman", there are really ut fifty who have some part in tting out each month's edition. ce alone forestalled picturing all the people and machines. Those o plan the publication are: Harry Bennetts, Editor; Miss Joan hindling, Associate Editor; Mrs. ra Siefkas, Office Secretary; H. Wilson, Artist; and Arthur ith, Printer.

**Not in the action that day, but always very necessary is artist, H. A. Wilson, working at his drawing board. A professional, commercial artist, he is as completely versed in the art of printing as he is with his drawing board. To him much credit is due for the happy new "Spokesman" cover. He also drew the cover for our 16th Annual Meeting announcement that caused so much chuckling over its originality. All Spokesman cartoons and drawings are his creations.**

After planning and laying out the copy in the office, the final copy goes to the printing plant. Associate Editor, Joan Schindling, and Arthur Smith usually, are on hand when the press starts rolling for a last minute check-up on general appearance. Actual printing is done by Ashcraft, Incorporated, operators of a new and completely modern plant. Printing takes place on the latest model, high-speed machine capable of 3,000 impressions an hour.

### WHO ORIGINATES THE "SPOKESMAN"

Actually, the contents originate from the membership of the National Lubricating Grease Institute, who submit technical articles covering various phases of the lubricating grease manufacturing industry. The relatively small staff engaged in its publication primarily focus their efforts in planning and layouts calculated to give a pleasing and live appearance. The greatest problem is giving a "live" appearance. Since practically all composition is heavy technical reading, the staff is faced with the problem of giving an overall appearance of easy reading to lure the reader from allied, or completely unconnected fields, such as the college student. Outside readers are absolutely essential to retain present high circulation figures. Dependence upon technical readers entirely would net a circulation much smaller than present figures.

Speed and teamwork is the most noticeable characteristic of the staff engaged each month in the publication of the industry magazine. Decisions of "when" and "how" are usually made on the spot, with all staff members present. Once decisions have been reached, each goes about his own particular job completing it on time, or—there would be no "Institute Spokesman".

## Lubrication for Preventive Maintenance

(Continued from page 8)

design, while at the same time machine construction has taken advantage of improvements in lubricants to utilize their capabilities for sustaining continuous operation and maximum production output. New designs have required new specialized lubricants, and research has brought forth the products needed.

Every industry and each plant presents its peculiar problems. Steel mills require lubricants that will resist shock loads and high temperatures; changing rolls because of worn bearings or worn roll necks is costly and cuts down production. Paper making is another continuous process where machinery offers still other conditions in its various departments, from water at the beaters to high temperatures on the drying rolls. In the textile field lubricants must not stain, or must wash easily from thread and fabric; properties to prevent creeping or throwing are important in some applications, to avoid spoilage of finished goods and consequent loss in production. Food handling machinery requires lubricants that will not work out of bearings and contaminate foods.

This is an era of continuous processes, and just any old oil or grease will not do. The lubricant for today's machinery in whatever industry must have properties making it capable of keeping the machinery in continuous service. The requirements must be carefully studied and understood, and the lubricant selected accordingly. Because there are an infinite number of combinations of operating requirements, there must be a large number of industrial oils and greases; in some instances a special lubricant may have to be prepared with qualities needed to meet the demands of a particular service.

Not infrequently a lubricant must be a compromise. An enclosed gear case may be an example. Here the lubricant must protect gear teeth that are subjected to high unit pressures on a line of contact, while at the same time it must lubricate high speed journals running in bearings of sensitive alloys. The practical lubricant must be a compromise between the ideal products for the gears and the bearings.

To meet these ever appearing new demands refiners have reached beyond the realm of straight petroleum refining, to draw on the chemical industry for additives that will provide lubricants with qualities beyond the scope of any petroleum refining processes. Though extreme pressure properties, resistance to oxidation, corrosion and foaming and through other useful qualities built into lubricants, the horizon of designers is being constantly extended. The products of their ingenuity become more and more complex, and the lubrication problems that are introduced are often a challenge to the oil supplier and to the operator.

*Whereas at one time a machine was designed and built, and then turned over to the purchaser to figure out how it could be lubricated, today's precision machines are so dependent on lubrication that they virtually must be built around a lubricating system. In modern design*

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## Lubrication for Preventive Maintenance

(Continued from page 18)

*Lubrication has become a first consideration rather than an after thought.*

However, the lubrication system is valueless if it is not intelligently attended and employed. With the cooperation of suppliers, plant operators can determine the lubricants which will serve most effectively under the operating conditions imposed; but selection of the proper lubricant does not assure good lubrication. First the lubricants must be so handled and stored that they will reach the bearings without contamination and with all the built in qualities preserved. The method and the frequency of application for best performance must be determined; and this should be so programmed and scheduled that there is uniform and correct lubrication at all times.

Each advancement in precision building of machinery has brought lubrication further and further out of the realm of the grease monkey, and deep into the province of the maintenance engineer. Lubrication no longer can be a haphazard greasing job; it has become an engineering procedure in plant operation, calling for clear understanding and for administration by trained personnel. It is accepted that the operation of any plant is not possible without lubrication; but it should be more fully realized that UNINTERRUPTED operation and MAXIMUM PRODUCTION depends on the correct lubricants, intelligently applied, scheduled and administered by understanding engineers.

Production is judged at the loading platform. Management cannot tolerate machines that slow down production, nor personnel that avoidably permits such to occur.

Maintenance today is no longer synonymous with repairs; rather it means prevention of repairs, and lubrication is the preventive maintenance engineer's most valuable tool.

## President's Column

(Continued from page 12)

to a greater field carrying the message of our industry to the far-flung empires that embrace the petroleum world.

The national office of the Institute has also grown to keep pace with our ever-expanding activities and membership. This year we were faced with the necessity of obtaining a new Executive Secretary taking the place of Mr. Carl E. Bolte, who had resigned to become Vice President of the Battenfeld Grease and Oil Corporation.

The mechanics of bridging the gap between the highly successful work performed by the previous Secretary and carrying it over to the point where it would be reflected in the work of his successor was a task aptly performed by our Board and Committees assigned to work with him. Today and tomorrow your Institute office is ready to serve our industry in any capacity you may demand.

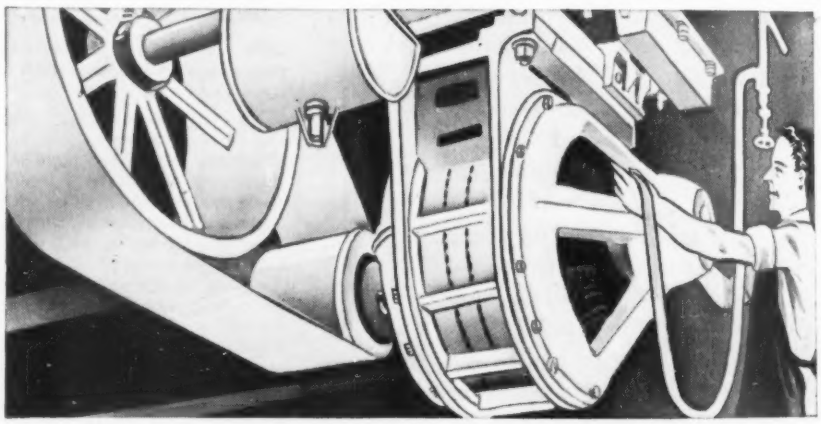
Today you and I stand on the threshold of a new Institute year. We are not faced with the vague contemplation that it will bring us greater realizations of industry accomplishments. We know it will. The foundation for development into new pursuits has been planned and built to completion. It now only remains for our 1949 industry leaders to complete the structure. As your past president, it is my constant hope I may be accorded the privilege of working on the Institute structure and future with you.

## Emery Welcomed By Institute

(Continued from page 11)

high-pressure splitting and the addition of equipment to oxidize, hydrogenate, and esterify Fatty Acids, Emery has just completed the installation of the latest machinery for the manufacture of candles in a modern, completely air-conditioned plant. Their history began with candles and candles are still an important part of Emery Industries, Incorporated.






CHAIRMAN T. G. ROEHNER, DIRECTOR OF THE TECHNICAL SERVICE DEPARTMENT, SOCONY-VACUUM LABORATORIES.

Past annual meetings of the Technical Committee have served as open forums for discussions of a wide range of problems of immediate interest to grease technologists. This year's meeting, to be held the last day of the October 11-13th meeting of the Institute, should be no exception in that respect. We have received letters from a number of members with constructive suggestions regarding subjects to be discussed and because we expect to receive more, we shall delay distribution of copies of the complete agenda until October 11th, at the meeting. However, in the meantime we submit the following general information.

From the aforementioned letters, it was evident that we should again arrange for a review and discussion of the activities of ASTM Technical Committee G and possibly SAE Aeronautic Division's Aircraft Bearings and Lubricants Committee S-5c. Reports, of course, will be given on the activities of the ABEC-NLGI Cooperative Committee on Grease Test Methods. A major subject will be the summary of the progress made to date by our Committee's Panel working on the determination of the delivery characteristics of grease dispensing equipment. The survey to obtain comments regarding ASTM Committee C-7's proposal for a specification for lime used in grease manufacture will also be discussed in detail.

In addition to the review of ASTM Technical Committee G's activities, time will be provided for a discussion of a number of specific subjects, including evaluations of bleeding characteristics, thixotropic properties and film strength of greases. Comments on experiences with the proposed ASTM Method for testing wheel bearing greases will be requested.

In line with statements made in previous Technical Columns, it is intended to include subjects involving manufacturing procedures, for example, discussions of grease pumps, filters, etc.

Finally, it is planned to arrange for the organization of a number of Panels to work on assignments such as maintaining a bibliography of technical articles on greases, obtaining papers for "The Institute Spokesman", and gathering material for future Technical Columns. Panels will also be set up to undertake studies of any questions raised during the meeting when it is the consensus of the members that further action is warranted and would not duplicate efforts of other technical groups.

It is believed that the above is sufficient to indicate that October 13th will be a busy day for the Technical Committee.

# ANSWERS *To Your Questions About* POLYETHER SYNTHETIC LUBRICANTS

*The September issue of "The Spokesman" carried an article entitled, "Industrial Uses of Some Polyether Synthetic Lubricants". This subject raises many questions. In an attempt to answer some of these questions, this follow-up discussion is presented . . .*

## DISCUSSION BY:

**S. C. GRIFFITH, Lubrication Engineer, Jones and Laughlin Steel Corporation, Pittsburgh Works, Pittsburgh, Pennsylvania**

**J. H. LEWIS, Lubrication Engineer, Carnegie-Illinois Steel Corporation, Clairton Works, Clairton, Pennsylvania**

**R. A. KRAUS, General Millwright Foreman, Republic Steel Corporation, South Chicago Works, Chicago, Illinois**

**W. H. MILLETT, Carbide and Carbon Chemicals Corporation Tonawanda, New York**

**C. E. PRITCHARD, Chief Lubrication Engineer, Republic Steel Corporation, Cleveland, Ohio**

**J. D. LYKINS, Lubrication Engineer, Wheeling Steel Corporation, Yorkville Works, Yorkville, Ohio**

**J. E. SULLIVAN, Vice President, Edgar E. Brosius Company, Sharpsburg, Pennsylvania**

**R. S. SHOEMAKER, District Manager, Brooks Oil Company, Middletown, Ohio**

This discussion followed the presentation of Mr. Millett's paper on Polyether Synthetic Lubricants at the AISE Annual Convention, Pittsburgh, Pennsylvania, September 24, 1947.

*S. C. Griffith*: There is no one here who has not had previous contact in some manner with the synthetic type of lubricant. However, the term synthetic can easily connote the thought of a substitute product, and the inference is drawn that substitute products do not merit any particular consideration. This interpretation must be avoided very carefully in order to appreciate what is being offered by these relatively new materials.

In any analysis these four factors should be considered:

1. By its very definition, a lubricant is not classified by any predetermined pattern.
2. Fluid and grease type conventional lubricants have recognized limitations in their properties which restrict their successful performance under certain operating conditions.
3. Synthetic lubricants have a series of unusual properties which are inherently related to their chemistry and which, by customary standards, are both superior to and inferior to conventional lubricants.

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(Reprinted from The Iron and Steel Engineer. August, 1948)

**William H. Millett**
**Author of "Some Polyether Synthetic Lubricants"**

WILLIAM H. MILLETT was born on January 9, 1913 in Springfield, Vermont. He received his B. S. degree in Chemistry from Colby College in 1934, his A. M. from Princeton University in 1935, and his Ph.D. from the University of Pennsylvania in 1942.

While pursuing his graduate work at the University of Pennsylvania, Dr. Millett served in turn as Assistant Instructor and Instructor in Chemistry. In 1941 he accepted a position with the Carbide and Carbon Chemicals Corporation and served as Fellowship Assistant on the Organic Synthesis Fellowship at Mellon Institute of Industrial Research. During the war he accepted a commission in the Navy and was stationed for nearly three years at the U. S. Naval Engineering Experiment Station, Annapolis, Md., where we worked on synthetic oils and specialty lubricants. Following V-J Day, he went to Japan as a member of the Fuels and Lubricants Team of the Navy's Technical Mission to Japan and served for one term as an instructor in Chemistry at the Post Graduate School of the U. S. Naval Academy. Upon being released from the Navy as a Lieutenant in 1946, Dr. Millett returned to the Carbide and Carbon Chemicals Corporation and since then has been engaged in research and development pertaining to the industrial utilization of "Ucon" Brand Synthetic Lubricants.

Dr. Millett is a member of the American Chemical Society and the American Society of Lubrication Engineers. He is also a member of Phi Beta Kappa and an Associate member of Sigma Xi.

## Polyether Discussion

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4. Synthetics have not been developed and introduced as replacement products but rather as a new means of improving operations.

A review of the various properties of the materials that have just been presented does not add anything of value to this session. However, these properties do merit very careful consideration in view of the practical data contained in the discussion. It is a mistake to assume arbitrarily that synthetics have no application in the operations with which we are individually familiar. The acceptance, as unavoidable and routine, of a costly maintenance and operating practice is too easily assumed. A recent experience illustrated that point very forcibly.

It is unreasonable to enlarge further upon this matter because of limited personal experience. However, this thought may be emphasized. The synthetics that have been presented are not untested laboratory phenomena but are materials with exceptional qualities which have a very definite practical field of application.

*J. H. Lewis*: From what experiences I have heard about—not that I have had myself—with synthetic lubricants, I feel that there is a lot of work to be done in designing equipment for heavy industry before we go into that particular type of lubricant. I do not think there is enough production on it now so that we could go into it on the basis of price.

Due to the fact that a lot of our equipment would not be able to retain it, if we went into it on a large scale, the benefits we would derive from a good lubricant we would lose, on the other hand, in cost. I think a lot of work has to be done in designing equipment before we can actually go into a real use of synthetic lubricants.

*R. A. Kraus*: The result which undoubtedly will be obtained from continued research in non-hydrocarbon synthetic lubricants will possibly be of great value in the future. This will be particularly true as the better producing wells are expended and as the more marginal supply sources for conventional petroleum lubricants are forced into service in order to maintain the continued high production rate of petroleum products. These marginal sources will in all likelihood force the cost of producing the conventional petroleum products higher, with the result that use of the more expensive synthetic products will ultimately become economically sound for more and more industrial applications. Similarly, the use of synthetic petroleum products made by hydro-carbon transformations will, potentially at least, become of greater importance. Petroleum products of this type were used successfully to an increasing extent by both our enemies and our ally, China, during the recent conflict when these countries found their conventional petroleum lubricants and fuels in short supply. Ultimate shortages of the natural product in the future may again force a similar production to supply the world's needs for these materials.

As more present day practical applications are found for the non-hydrocarbon synthetic material, thereby increasing the total present day consumption, economics dictates a probable decrease in the manufacturing cost, which in turn will bring near the day when a more favorable cost comparison can be made for more industrial applications. In regard to these potential new applications for the synthetic lubricants, I would like to ask several questions regarding data that was not brought out in the paper.

1. When making a substitution involving the replacement of a given viscosity straight mineral oil with your synthetic lubricant, what viscosity relationship will hold in order to obtain equivalent lubricity?

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## Polyether Discussion

(Continued from page 24)

2. In regard to the greases, what general characteristics can be expected?

3. Are the metallic soaps all soluble in the synthetic oils and what success has been had using carbon dispersions as thickening agents?

*W. H. Millett*: In answer to the first question, if the application is one involving hydrodynamic lubrication, the primary consideration would be to have the same viscosity at the operating temperature as you have with a suitable mineral oil. This will frequently give an advantage at starting temperatures, or throughout the operating temperature range. For hydrodynamic lubrication problems, select the viscosity of synthetic such that it will be the same as the petroleum product in the operating range. In these instances, the effectiveness of a lubricant is largely a function of viscosity and it would be desirable to choose the lubricant on the basis of viscosity at the operating temperatures.

*R. A. Kraus*: In those conditions where boundary conditions exist, would you say that the needs are for equivalent viscosities?

*W. H. Millett*: We are investigating the boundary lubrication picture in the laboratory, and have been evaluating various basic types of mineral oils, such as midcontinent, naphthenic and paraffinic oils; and comparing them with the synthetic product without the use of film strength additives, either in the mineral oils or in the synthetic. In general, they fall in the same categories as the mineral oils as far as the extreme pressure load-carrying capacities are concerned, evaluating them in such laboratory machines as the SAE, the Timken, the Falex, and the Shell 4-ball machine.

The lubricant which, in one instance will appear to have a slight superiority, will in other instances be found to be inferior. For example, in a series of Timken machine tests, a certain paraffinic oil was shown to be slightly superior in load-carrying capacity to a synthetic lubricant of comparable viscosity, whereas naphthenic- and mid-continent-type oils were shown to be slightly inferior. In Shell 4-ball machine tests, however, the polyether synthetic lubricants have been found to have an appreciably greater load carrying capacity than any straight mineral oils of comparable viscosity.

*R. A. Kraus*: Then in general we can say that across the whole range from hydrodynamic or fluid friction through boundary conditions, the requirements for equivalent lubricity indicate that similar or equivalent viscosity relationships will hold.

*W. H. Millett*: That is right, I think we would be safe in making that assumption.

Your next question was: "In regard to the greases, what general characteristics can be expected?"

What type of characteristics are you referring to?

*R. A. Kraus*: You did cover the subject of grease to a minor extent in your paper, but I am inquiring whether all metallic soaps are soluble in your synthetic oil.

*W. H. Millett*: No. In fact, most conventional soaps when compounded into greases by customary methods using the polyether lubricants as the base fluid do not yield stable greases. However, exceptionally stable greases can be prepared by resorting to slight variations in the soap and in blending technique. The following information is of interest: bleeding and evaporation losses for the high temperature grease, HT-1256-A, after 50 hours at 340°F. were found to be 0.2 and 3.5 per cent, respectively. Comparable values for the low temperature grease, LT-64-F, in 50 hour tests at 212°F. were: bleeding 0.2 per cent, evaporation, 0.9 per cent.

*R. A. Kraus*: What types of soaps are used in these greases?

*W. H. Millett*: Lithium soaps are used.

*R. A. Kraus*: What has been your experience regarding the pumpability of the various products?

*W. H. Millett*: We find that, in this particular, the synthetics offer a certain advantage, especially at low temperatures. These lubricants can be pumped at temperatures below their pour points in view of the fact that they contain no wax and the pour point is a so-called "viscous pour."

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## Polyether Discussion

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We have done very little with bon dispersions as thickening ents, although it is certainly a mising field.

In regard to Mr. Lewis' comment, would like to mention that we rea- that these products are some- at more expensive than conven- nal lubricants. Efforts are being de to find places where they fit and where they can do a better and one that is economically tified on the basis of cost. I also h to reiterate that in view of the h cost of equipment and machin- and the expense of shutdowns d inefficient operation, there are ny instances in which higher ini- lubricant cost, although it may k a bit startling at first, is not ing to prove as expensive as it ht seem and may in the last anal- s provide substantial savings.

*C. E. Pritchard*: The usage of thetic lubricants is something that feel certain will definitely be of erest to us all in the future. How- r, there are a lot of questions that still to be answered as to their actical limits in field applications.

The one that seems to come to nd at the present time is in direct lation to the cold rolling field, or ld rolling practice. What has been ur experience in regard to the mparative spreading rate of syn- tic versus the conventional min- l oil?

*W. H. Millett*: No spreading rate easurements have been made, al- ough the problem is being investi- ted. As far as the surface wet- bility is concerned the synthetic bricants may be expected to do well as petroleum oils, as eviden- d by a wide background of engine ts and similar applications, where ere has been no evidence of in- equate wetting. In this particular oblem the spreading rate is a fac- that will have to be considered.

*C. E. Pritchard*: I might mention at the reason for the question is at in our own field experience, we d occasion to run an experimental st involving the usage of one of e synthetic lubricants, such as ere mentioned in your paper. It as applied by the drip method on- the strip surface during the cold lling operation and definitely did t show the same spreading rate as was experienced with a conventional mineral oil similarly applied. The same product properly esterified did a decidedly better job in this respect.

*W. H. Millett*: That will undoubtedly be the answer getting more polar groups into the lubricant, and that is the approach being followed in the laboratory. This may be accomplished either by modifying the basic synthetic molecule to give increased spreadability, or by adding polar additives that will tend to wet the surface to an even greater extent.

*C. E. Pritchard*: I have one other question. The suffix "X" seemingly has been referred to in practically every example given. I presume that it is an inhibited product, and, if so, why is it so much a generality, if your original comments are correct?

*W. H. Millett*: The "X" represents the presence of an oxidation inhibitor. In most instances involving high temperature applications, the oxidation inhibitor is needed to delay the oxidation of the fluid resulting eventually in volatilization and dissipation of the lubricant. In the presence of the antioxidant, the lubricants have a much longer life and do not break down as rapidly as without the inhibitor. In some particular applications, a clean "burn-off" is desired. In these cases, the anti-oxidant would not be included, and the lubricant would pass off as volatile decomposition products without leaving any appreciable residue.

*C. E. Pritchard*: The next question is in regard to your comments covering the usage of the synthetic lubricants for cold drawng of carbon bars. I would like to ask at this time what the effect has been in field practice regarding the contamination of the lubricant with lime sludge.

*W. H. Millett*: We have had no experience in that regard to the best of my knowledge.

*J. D. Lykins*: I have no comments on the paper, but I do have a question. In the steel industry, especially where we have our older equipment and machinery that has been speeded up, we have excessive loads.

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## Polyether Discussion

(Continued from page 27)

What has been done to increase the film strength of the lubricant, that is, are extreme pressure additives added?

*W. H. Millett*: A program has recently been started in connection with this problem as mentioned previously. Work is in progress on various load-carrying machines with lubricants containing commercially available extreme pressure additives. Experiments are also being made with other types of additives suitable as film strength improvers in the thin film lubrication range. Indications are that the commercially available extreme pressure additives, if soluble in the synthetic lubricants, work very well under extreme pressure conditions. We do not have much specific information on this at the present time.

*J. E. Sullivan*: Our experience is very limited. We just tried this synthetic in March of 1947 with two machines in Altoona. We were very apprehensive about it because the pump involved was a very delicate piece of mechanism, and we have

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## lyether Discussion

(Continued from page 28)

told no to use anything but heavy oils. Mr. Schmidt, who the chief engineer, decided to go ad with it, and it has been run- now for six months, and we been getting very good results. at is as much as we know at the ent time.

*R. S. Shoemaker*: The first sen- ce in the paper says, "In recent ars there has been a widespread erest in the commercial availabil- and utilization of various types synthetic oils and lubricants." ere certainly is a widespread in- rest in this material. We are all y much interested to know how we can go with it. The price of material is one of the outstand- factors which, of course, is work- against its use at the present. e of our previous speakers ex- ssed the hope or the probability at the cost of regular lubricants uld come up and eventually meet high price. Speaking for the el industry, I hope it will go the er way. Prices are high enough. Another question I had in mind what are the extreme pressure alities of this material? I want to ow how they compare with ordi- y extreme pressure lubricants as know them and use them today. ese oils seem to have just about erything that anybody could de- in a lubricant. I would like to ar another word or two on the treme pressure qualifications.

*W. H. Millett*: This has to some ent been covered in answer to evious questions. We find, for mple, that lead naphthenate, a iliar type of extreme pressure ditive, is effective, but that com- ibility at lower temperatures is mewhat questionable. A good ny of the commercially available treme pressures are usually ob- ned in oil solution, and it is dif- ult to work with them because of compatibility with mineral oil. owever, we have found some that em to be equally as effective as the st currently available extreme ssure additives based on results the extreme pressure test ma- ines.

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STRATCO

# PRESSURE SOAP CONTACTORS AND OIL CIRCULATION HEATING SYSTEMS

*Make*

## CALCIUM CUP GREASE IN 1¼ HOURS

**Cut Costs---Increase Plant Production**
**Produce A More Uniform Product**

Stratco Pressure Soap Contactors and Oil Circulation Heating Systems make possible the manufacture of calcium cup grease, from raw material to packaged product, at the rate of six batches in eight hours . . . soda fiber greases in 2½ hours.

Simplified laboratory control . . reduced manpower requirements . . increased production of a more uniform product result. The Stratco process has been fully tested and proved in commercial operation.

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PETROLEUM REFINING ENGINEERS

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